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ABSTRACT

This study explores the effects of cooperative and mastery learning methods, alone and in combination, on first and second grade students' learning and retention of basic economic facts. A 2 X 2 (cooperative X mastery) factorial design compared the achievement of 120 students randomly assigned by grade level stratification to one of four treatment conditions: cooperative learning; mastering learning; cooperative-mastery learning; and a control treatment (no cooperative or mastery learning). All subjects were administered a written pretest, posttest, and delayed posttest on their understanding of economic concepts. In addition, a randomly selected subsample of 64 students was interviewed using an oral pretest, posttest, and delayed posttest. The study suggests that the cooperative-mastery learning method is in line with current early childhood practices and has the capacity for simultaneously boosting the conceptual development and language development of young children. This capacity is said to stem from the method's provision of: (a) specific, positive feedback; (b) a social context for sustained effort and involvement in a topic; (c) child-child communication exchanges; and (d) adult-child communication exchanges. (EH)

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THE EFFECT OF COOPERATIVE AND MASTERY LEARNING METHODS ON PRIMARY GRADE STUDENTS' LEARNING AND RETENTION OF ECONOMIC CONCEPTS

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ABSTRACT

Research Findings

Empirical studies have shown the positive effects of combining cooperative and mastery learning methods on mathematics achievement, higher order questioning skills, and originality, but little is known, at present, about the effects of cooperative-mastery learning in other subject areas or on other cognitive outcomes. The problem of this study was to explore the effects of cooperative and mastery learning methods, alone and in combination, on first and second grade students' learning and retention of basic economic concepts. A 2 X 2 (cooperative X mastery) factorial design compared the achievement of one hundred-twenty students who were individually randomly assigned (using grade level as a stratification variable) to one of four treatment conditions--instruction on basic economic concepts using (1) cooperative learning, (2) mastery learning, (3) cooperative-mastery learning, or (4) a control treatment (no cooperative or mastery learning). All subjects were administered a written pretest, posttest, and delayed posttest on their understanding of economic concepts. To further probe children's understanding of economic concepts, a randomly selected subsample of sixty-four students was interviewed using an oral pretest, posttest, and delayed posttest. Overall, the results support the superiority of the cooperative-mastery learning method over either method alone in promoting the acquisition and retention of economic concepts. Pretest data verified the initial equivalence of groups. The cooperative-mastery learning group outperformed (a) the control group on all

posttests and delayed posttests and (b) the cooperative learning group on all posttests and delayed posttests except the written posttest. By delayed posttest on the oral measure, the cooperative-mastery learning group was also outperforming the mastery learning group. As further evidence of the superiority of the cooperative-mastery learning method, the mean score of the cooperative-mastery learning group was greater than the combined mean scores of the mastery and cooperative learning groups on the oral posttest and delayed posttest.

Practice or Policy

The authors suggest that the cooperative-mastery learning method is in line with current early childhood practices and has the capacity for simultaneously boosting the conceptual development and language development of young children. This capacity is said to stem from the method's provision of (a) specific, positive feedback, (b) a social context for sustained effort and involvement in a topic, (c) child-child communication exchanges, and (d) adult-child communication exchanges.

THE EFFECT OF COOPERATIVE AND MASTERY LEARNING METHODS ON PRIMARY GRADE STUDENTS' LEARNING AND RETENTION OF ECONOMIC CONCEPTS

Many states have recognized the importance of including economic education in the elementary school curriculum. According to Kourilsky (1986), large numbers of today's at-risk elementary students will never reach high school. Without economics instruction during their elementary school years, these students are not likely to acquire the knowledge and skills necessary for functioning within the American economic system. Curriculum materials developed for the primary grades by Kourilsky (1992) feature activities that lend themselves to cooperative and/or mastery learning formats. The theoretical and research-established benefits of cooperative and mastery learning methods, alone and in combination with each other, are described in the paragraphs that follow.

According to Bloom (1976), the mastery learning method constitutes a powerful way of providing students with feedback correctives. These feedback correctives serve to adapt the instruction to individual student needs, thus enabling each learner to reach mastery level. Numerous field studies (e.g., Block and Burns, 1976; Guskey and Pigott, 1988; Kulik, Kulik, and Bangert-Drowns, 1990) have demonstrated the effectiveness of the mastery learning method on academic performance as measured by criterion-referenced and teacher-made tests. Other studies (e.g., Block, Efthim, and Burns, 1989; Mevarech, 1980; Mevarech and Werner,

1985; Soled, 1986) have shown that the positive effects of this method extend to higher cognitive processes as well--at least when they are assessed by criterion-referenced and teacher-made measures. In contrast, there is some evidence derived from year-long studies using standardized, norm-referenced measures that there are no greater effects for mastery learning over traditional methods (Slavin, 1987, 1989).

The cooperative learning method can also facilitate learning. According to Mevarech and Susak (1993), recent studies in social cognition suggest that cognitive functions emerge at the social level before the individual level. Vygotsky (1978) indicates that acquisition of concepts and higher cognitive processes can occur through oral communication with others. Studies by Sharan (1980) and Slavin (1980, 1983) show cooperative learning to be especially useful in developing higher cognitive processes, and Mevarech and Susak (1993) point out that cooperative learning motivates many students by fostering active participation.

Based on research and theory such as that described above, Bloom (1984) calls for cooperative and mastery methods to be combined to enhance various cognitive outcomes. Recent studies by Mevarech (1985, 1991) and Slavin and Karweit (1984) have demonstrated the effectiveness of the cooperative-mastery learning method in promoting academic achievement in mathematics. Another study by Mevarech and Susak (1993) directly compared the effects of cooperative learning, mastery learning, cooperative-mastery learning, and a control treatment on third and fourth grade

students' questioning behavior and creativity. Results indicated that the students in the cooperative-mastery learning and mastery learning groups scored higher than the cooperative learning group on measures of higher order thinking skills and originality. In addition, the cooperative learning group outperformed the control group. The cooperative-mastery learning method was the most effective treatment for promoting originality, while the mastery learning method yielded the highest scores in flexibility and fluency.

Little research on the cooperative-mastery learning method has been done with respect to other subject areas and cognitive outcomes. Presently, although economics curriculum materials such as those developed by Kourilsky (1992) are available that lend themselves to cooperative and/or mastery learning methods, very little is known about the benefits of these methods in the area of economic education. One study by Kourilsky and Wittrock (1992) indicates that the economic learning of high school students can be increased by using generative comprehension procedures within cooperative learning groups, but, obviously, more research is needed on the individual and combined effects of the cooperative and mastery learning methods on achievement in economics.

Only a few researchers have explored the economic thinking of preschool and primary-grade children. Of these, most (e.g., Ajello et al., 1987; Armento, 1982; Berti et al. 1986; Burris, 1976; Fox, 1978; Furth 1980; Schug, 1981, 1983; Schug and Birkey, 1985; and Strauss, 1952) have undertaken interview studies that

look for developmental patterns in economic reasoning. The findings of these studies suggest that economic thinking develops in an age-related, stage-like sequence. Summarizing across the aforementioned studies, Armento (1986) describes children's concept response patterns as progressing "from egocentric to objective; from tautological, literal, and rule-oriented to generalizable; from concrete to abstract; and from inconsistent and narrow to consistent, flexible, and accurate" (p. 89).

According to Schug (1983), many young children exhibit unreflective economic reasoning characterized by (a) a preoccupation with the physical characteristics of the object or process being discussed, (b) egocentric thinking, (c) confusion in identifying causes and effects, and (d) an inclination to treat variables as interchangeable. Research on economic reasoning has demonstrated that young children tend to have many misconceptions about basic economic concepts indicative of unreflective economic reasoning. Specifically, young children have problems understanding and/or using such concepts as wants, scarcity, money, monetary value, exchange, change, profits (and what store owners do with the money received from customers), and opportunity cost.

Armento (1982) found that children less than five years old tend to give inaccurate responses and justifications for their responses when asked whether people have everything they want. She labels some responses as tautological (e.g., "Yes, people have everything they want because they always do") and others as

moralistic (e.g., "No, people don't have everything they want, because Jesus don't want them to") (p. 88).

In an experiment conducted by Schug (1983), young children's thinking about the value of money was often inflexible and based on the physical characteristics of the genuine and play dollar bills shown to them. Typical responses indicated that the genuine dollar bill had value because it was "real" and that the play dollar bill had no value because it was "not real" (p. 143). The children commonly mentioned the size, shape, and color of the dollar bill when explaining why one dollar bill was more valuable than the other.

Burris (1976), Fox (1978), Furth (1980), and Strauss (1952) discovered that many young children fail to grasp the reciprocal nature of transactions between buyers and sellers in stores and the role of money in exchange. For example, many of the children interviewed in these studies thought that buyers gave money to sellers in order to avoid breaking the law or to do what was right. Store owners were seen as providers of money to buyers, and "change" was the label given to the money received.

In a study by Furth (1980), children approximately ages six through eight understood the role of money in exchange but could not explain what happened next with the money. The children did not understand what the store owner did with the money received from his/her customers.

Kourilsky (1987) points out that many primary and intermediate grade students have difficulty understanding the concept of

opportunity cost (i.e. one's second choice for how to use a scarce resource). Instead of thinking of opportunity cost as one's next best alternative, elementary school children often consider opportunity cost to be all of the alternatives that one gives up when making a decision.

With respect to primary-grade students' acquisition of misconception-free ideas about economic concepts through school-based instruction, empirical studies have revealed several factors that positively influence achievement. These factors include (a) exposing students to correct information about economic ideas, (b) having children find discrepancies between predicted and actual outcomes of economic events, (c) giving students the opportunity to talk about economic concepts (Berti et al., 1986), (d) providing children with real-life economic experiences, (e) helping students invent their own concept labels for economic ideas (Laney, 1989), (f) having students engage in two kinds of information processing through the generation of both verbal and imaginal representations of economic ideas (Laney, 1990), and (g) using instructor-led debriefings as a follow-up to real-life experiences with economic concepts (Laney, 1993). The study described in this paper extends this body of research to cooperative and mastery learning methods, exploring the effects of these methods, alone and in combination, on first and second graders' understanding of basic economic concepts.

Research Questions

The two research questions for the study were as follows: (1) What is the effect of cooperative and mastery learning methods, alone and in combination, on first and second graders' learning and retention of economic concepts as measured by a written understanding-of-economic-concepts measure? (2) What is the effect of cooperative and mastery learning methods, alone and in combination, on first and second graders' learning and retention of economic concepts as measured by an oral understanding-of-economic-concepts measure?

Methods

Subjects for the study included one hundred-twenty students (sixty-four first graders and fifty-six second graders) enrolled in multi-age programs at two elementary schools in north central Texas. A multi-age setting was considered desirable because two of the four treatment conditions to be employed called for students to be organized into small, heterogeneous cooperative learning teams. In such a setting, grade level served as one of the stratification variables used to randomly assign students to teams. None of the subjects had received prior instruction in economics.

With respect to gender, there were sixty-five males and fifty-five females in the study. School #1 was 57% male and 43% female, while school #2 was evenly divided between males and females. Across both schools, 54% of the students were male and 46% were female.

With respect to racial-ethnic diversity, there were ninety-four Caucasians, nineteen African-Americans, and seven Hispanics in the study. School #1 was 89% Caucasian, 8% African-American, and 3% Hispanic, while school #2 was 63% Caucasian, 27% African-American, and 10% Hispanic. Across both schools, 78% of the students were Caucasian, 16% were African-American, and 6% were Hispanic.

At the beginning of the school year at each of the two elementary schools participating in the study, first and second graders were individually randomly assigned (using grade level as a stratification variable) to one of four multi-age classrooms. The four treatment conditions were then randomly assigned to the four classrooms at each elementary school. In all, across the two schools, eight classrooms took part in the study--two classrooms for each of the four treatment conditions. To ensure equal numbers of first and second graders within each treatment group, an equal number of first graders and an equal number of second graders were randomly chosen within each classroom at each school for inclusion in the final sample. Each treatment group consisted of sixteen first graders and fourteen second graders (or thirty students in all).

The eight regular elementary classroom teachers served as the instructors for the various treatment groups in the study. All of the teachers were female. They were similar in years of teaching experience (five or more) and in their lack of previous experience with teaching economic concepts.

Prior to beginning instruction, each of the eight combination first and second grade teachers participated in separate, individualized inservice training sessions. These sessions, conducted by the lead investigator, were designed to thoroughly familiarize each inservice teacher with (a) the economic concepts that she would be teaching to her students and (b) the particular instructional methodology that she would be using to deliver instruction. The lessons to be taught were explained, modeled, and discussed in detail during these sessions.

As in Mevarech and Susak (1993), the study used a 2 X 2 (cooperative X mastery) factorial design. The four resulting treatment groups, each consisting of thirty students, were as follows: (1) a cooperative learning group, (2) a mastery learning group, (3) a cooperative-mastery learning group, and (4) a control group (no cooperative or mastery learning methods). All subjects were administered a written pretest, posttest, and delayed posttest on their understanding of economic concepts. In order to further probe children's understanding of these same concepts, a randomly-selected subsample of sixty-four students (stratified by school membership, classroom membership, and grade level) was interviewed using an oral pretest, posttest, and delayed posttest.

The four treatment groups used in the study were patterned after those in Mevarech and Susak (1993). Each of these groups is described in detail below. It should be noted that the cooperative learning and control groups are somewhat contrived, with neither allowing students to receive corrective feedback from the teacher.

The artificial nature of these two groups constitutes a limitation of the present study, but it was necessary in order to isolate teacher-given corrective feedback (a key element of mastery learning) and prevent the contamination of nonmastery-oriented treatments.

Another possible, but unavoidable, problem in the design of this study concerns the nature of the control group. Because the control group uses the same content but not the same potentially-interesting games/activities as the other groups, it is possible that any difference between the control and other groups is attributable to this factor. To help overcome this problem, the chief investigator carefully designed the control group treatment, making it as interesting as possible through the use of activities calling for student generation of pictures and picture captions on the economic ideas taught.

All subjects, regardless of treatment condition, experienced six subunits on selected economic concepts including (1) resource and product, (2) scarcity, (3) opportunity cost, (4) goods and services, (5) complements and substitutes, and (6) exchange, change, and monetary value. Each subunit consisted of three, forty-five minute lessons spread across a week of class time; thus, instruction was limited to eighteen, forty-five minute sessions over a six-week period.

In the cooperative learning setting, understanding of economic concepts was developed in small learning groups on the basis of six subunits of instruction. Within each subunit, pupils listened to

a "fable" that taught an economic concept and then were involved in group seatwork activities and group games designed especially for this setting. In each of the two cooperative learning classrooms, pupils were randomly assigned (using grade level and the classroom teacher's ratings of students' general academic ability as stratification variables) to small heterogeneous groups of four or five pupils. Although external feedback correctives from the teacher were not provided in this setting, pupils could be expected to give feedback to each other because of the mutual interactions among team members as they engaged in the various activities and games designed for this setting. A common group goal, positive interdependence, and individual accountability--three critical features of cooperative learning as described by Slavin (1989/1990) and Johnson and Johnson (1994)--were present in each seatwork activity and game that teams undertook.

In cooperative learning, a group goal and positive interdependence require that students believe they are responsible for their own learning and the learning of other members in their group. To ensure the presence of these elements in the present study, the cooperative learning teachers told their students that everyone in a group (a) must agree on one set of answers and (b) be able to give and explain the answers. In addition, these same teachers encouraged students to work together by giving each group only one set of materials (e.g., one pencil and one sheet of paper or practice worksheet for written seatwork activities; one game).

The cooperative learning element of individual accountability calls for each student to demonstrate mastery of the assigned work. This element was provided in the present study by having the cooperative learning teachers tell their students that each group member must (a) share ideas within his/her group, (b) say what s/he thinks the answers are and why, and (c) be sure s/he can give the answers and reasons for answers. The cooperative learning teachers also monitored groups, reminding individuals of their responsibilities. Individual group members signed the bottom of each written seatwork activity and/or practice worksheet to indicate agreement with the answers.

Social skills, a third important element of cooperative learning, involves students communicating and working effectively with other students. Statements by the cooperative learning teachers, such as the ones described in the previous two paragraphs, were employed to achieve this end. Additionally, the cooperative learning teachers monitored groups and reminded students to acknowledge, recognize, and praise each other's contributions. These same students received specific instructions on how to cooperate (i.e. how to give and receive help) while learning in small groups.

Within each of the six subunits on economic concepts, students in the mastery learning setting listened to an economic "fable" and worked individually on seatwork activities and games designed especially for this setting. During each subunit, the mastery learning teacher reviewed each student's work and provided him/her

with feedback correctives focusing on the understanding of economic concepts. Students who performed below a preset mastery level (of 100% accuracy) on a five-item, end-of-subunit, written test received remediation from the teacher and were required to re-take the test.

The cooperative-mastery learning setting combined the two treatment conditions described above. Children in this setting listened to economic "fables", learned in small heterogeneous groups, and experienced the same group seatwork activities and group games as children in the cooperative learning setting. During each subunit, the teacher monitored the performance of individual group members and gave corrective feedback as needed. Those individuals who did not attain a mastery level of 100% accuracy on a five-item, end-of-subunit, written test received remediation from the other children on their cooperative team and were required to re-take the test.

In the control group setting, students were taught the same material using the discourse/recitation method (Gall, 1984), but no elements of cooperative or mastery learning were employed. Within each of the six subunits, students listened to a "fable" that taught an economic concept. The teacher identified examples of the economic concept and had students identify examples on their own for practice. The concept examples used by the teacher were taken from the seatwork activities, games, and tests used in the other treatment conditions as described above.

All four treatment conditions described above were identical in terms of objectives, basic curriculum material (number and nature of concept examples utilized), allocated learning time, and schedule of instruction. Only the instructional methodology differed between groups. The economic "fables", seatwork activities, games, and mastery test items referred to above were all based on ideas from Kourilsky (1983a, 1983b, 1992). In order to minimize teacher effect, all lessons and directions across the four treatment conditions were scripted in detail by the main investigator--a university-based economic educator and former elementary school teacher. In all, seventy-two scripted lessons (four treatments x eighteen lessons per treatment) were written and implemented. Appendix A, by comparing and contrasting the subunit formats of the four treatment groups, serves to (a) clarify the general sequence and components of the three lessons comprising each of the six instructional subunits and (b) illustrate the parallel nature of the four treatments.

As an experimental check of the adequacy of treatment implementation, two observers (the main investigator and trained research assistant #1) who were familiar with the principles of the four treatment conditions, observed each of the eight classrooms throughout the experiment. These observers also reviewed students' papers at the end of each subunit to ensure that students' performances and teachers' feedback to students were in accord with the main investigator's instructions.

Students were administered written and oral pretests, posttests, and delayed posttests (six weeks after instruction) on their understanding of the basic economic concepts taught in the six subunits. A decision-consistency approach was used to establish test-retest reliability for both the written and oral understanding-of-economic-concept measures. Prior to the study, a group of students comparable to those participating in the study were tested and retested (after an appropriate time delay) using both the written and oral understanding-of-economic-concepts measures. With the cut-off score for mastery set at 80% correct, the percentage of consistent mastery/nonmastery decisions was found to be 90% for both tests. The decision consistency of the six subtests constituting the written understanding-of-economic-concepts measure ranged from 85 to 100%. Thus, all tests had high test-retest reliability. These written and oral instruments are described in detail below.

All items on both the written and oral understanding-of-economic-concept measures called for students to put economic ideas into their own words and/or apply economic ideas in new situations. None of the questions were used or rehearsed during instruction; thus, correct responses on both measures reflect learning beyond mere factual recall.

The thirty objective items comprising the written understanding-of-economic-concept measure were based on ideas from Kourilsky (1983a, 1983b, 1992). Twenty-five of these items were binary choice, while the remaining five items were in a multiple-

choice (three-alternatives) format. For each of the six instructional subunits in the study, five items were developed and used to measure students' understanding of the economic concepts taught in that subunit; thus, the thirty-item written test consisted of six, five-item subtests. Pretest, posttest, and delayed posttest items for this instrument were identical, but they were in a different sequence for each administration of the test. None of the test items were used as concept examples during instruction.

On the five-item, resource-product subtest, each row/item showed a resource and a product made from that resource. Students were asked to circle the "R" by the picture that showed the resource and the "P" by the picture that showed the product.

The scarcity subtest consisted of five pictures depicting scarcity and non-scarcity situations. Students were asked to circle "yes" if the picture showed scarcity (i.e. more humans/animals than resources) or "no" if the picture did not show scarcity.

For each item on the five-item opportunity cost subtest, students were presented with a picture of a scarce resource (i.e. a picture of money or a raw material) and pictures of three possible uses for that same scarce resource (i.e. pictures of three store items that could be purchased or three factory products that could be made). After ranking their various alternatives (by writing "1", "2", and "3" by the pictures representing their first, second, and third choices) in that decision-making situation,

students were asked to circle the picture(s) constituting their opportunity cost (i.e. their second choice or next best use for the scarce resource).

The goods-and-services subtest featured five pictures of workers--some producing goods and others producing services. For each picture, students were asked to circle "G" if the person in the picture was producing a good or to circle "S" if the person in the picture was producing a service.

For each of the five items comprising the complements-substitutes subtest, students were shown two store items. They were asked to circle "C" if the two items shown were complements and "S" if the two items shown were substitutes.

On the exchange-change subtest, students were presented with pictures representing five purchasing situations. In each purchasing situation, students were shown an amount of money (between one and five cents) and a store item with a price tag (between two and eight cents). They were then asked to respond "yes" or "no" to one of the two following questions: (1) Can you make an exchange? (2) If you try to buy this store item, will you get change back from the store owner?

The seventeen queries on the oral understanding-of-economic-concepts measure were drawn from Armento (1982, 1986), Burris (1976), Fox (1978), Furth (1980), Laney (1993), Schug (1983), and Strauss (1952). Students received one point for each correct, misconception-free response and zero points for each incorrect, misconception-driven response (or no response). Across all items

on this instrument, use of traditional economic concept labels was not required for a response to be considered correct.

Appendix B lists the oral interview questions and directions to the interviewer from the oral understanding-of-economic-concepts measure. Interviews with individual students were conducted by the main investigator and two trained research assistants (#1 and #2), with each interviewer questioning an equal number of students from each of the four treatment groups. Wait time (after an interviewer's question and after an interviewee's response) and the number and nature of allowable cues/prompts was the same for all interviewees. Students' responses were tape recorded and later transcribed to facilitate analysis.

Two expert judges, the main investigator and trained research assistant #2, scored each oral response independently and blindly. The points awarded each item reflected the average of the two judges' scores. Decision consistency between the two judges was 96%; thus, interjudge reliability was high.

Because the main investigator served as an interviewer and as a judge in this study, experimenter bias represented a potential threat to experimental validity. Several steps were taken to minimize this threat. First, as mentioned earlier, the transcribed interview responses were scored by two judges--the main investigator and trained research assistant #2. Research assistant #2 was unaware of the main investigator's outcome expectations and thus served as an unbiased evaluator. As noted previously, interjudge reliability was high on the oral understanding-of-

economic-concepts measure. Second, a time delay of several weeks occurred between the transcribing of the interview responses and the scoring of these responses; consequently, the main investigator and trained research assistant #2 had time to forget which subjects gave which responses. Third, a subject's name and classroom membership were recorded on the back of the transcriptions to ensure blind evaluation by both judges.

Results

Data were analyzed using a split-plot factorial design. Treatment condition (four levels) was the between-groups factor, and school (two levels) was the between-blocks factor. Grade level (two levels) was used as the blocking variable (Kirk, 1993). All posttest and delayed posttest significance tests were carried out with alpha set at .05.

Post hoc analysis was used for further investigation of posttest and delayed posttest data. For each posttest and delayed posttest, eight contrasts were made. These contrasts included (C1) the cooperative learning group versus the control group, (C2) the mastery learning group versus the control group, (C3) the cooperative-mastery learning group versus the control group, (C4) the mastery learning group versus the cooperative learning group, (C5) the cooperative-mastery learning group versus the cooperative learning group, (C6) the cooperative-mastery learning group versus the mastery learning group, (C7) the combined cooperative, mastery, and cooperative-mastery learning groups versus the control group,

and (C8) the cooperative-mastery learning group versus the combined mastery and cooperative learning groups. The level of significance for these contrasts was set at .05/8 = .00625 to control Type I error rate.

Tables 1 and 2 contain the pretest score means and standard deviations for each treatment group on the written and oral understanding-of-economic-concepts measures. Written and oral pretest scores were used to verify the randomization of subject selection and assignment to treatment condition. To control for Type II error, pretest significance tests were carried out with alpha set at .10. Results indicated there were no significant differences between schools ($F(1,2) = 0.37$, $p > .10$) or treatment groups ($F(3,6) = 0.20$, $p > .10$). Also, there was no interaction effect for oral pretest scores ($F(3,6) = 0.53$, $p > .10$). However, there was a significant school-by-treatment interaction effect for written pretest scores ($F(3,6) = 8.76$, $p < .10$).

The interaction effect referred to in the preceding paragraph can possibly be attributed to blind guessing. The written understanding-of-economic-concepts measure was concept label-driven; in other words, familiarity with traditional economic concept labels was essential to an examinee's ability to knowingly mark correct answers. As mentioned earlier, twenty-five items on this test were binary choice, while the remaining five items were multiple choice (three alternatives). Because the first and second graders participating in the study had experienced no previous instruction in economics, they were not familiar with the economic

concept labels used on the written pretest. Therefore, it is likely that a great deal of blind guessing was taking place as students attempted to answer the pretest questions. A review of the written pretests by the researchers indicated that some students/ classes were willing to make blind guesses on all items, while others chose not to respond to certain items. With this explanation in mind and given the non-significant differences between schools and between treatment groups cited in the preceding paragraph, the groups participating in the study were considered to be equal.

Table 3 shows the posttest score means and standard deviations for each treatment group on the written understanding-of-economic-concepts measure. The cooperative-mastery learning group attained the highest mean score; the mastery learning group was second; the cooperative learning group was third; and the control group had the lowest mean score. Results of the analysis of written posttest scores indicated no significant difference between schools ($F(1,2) = .44$, $p > .05$) and no significant interaction effect ($F(3,6) = 3.04$, $p > .05$). There was a significant treatment effect ($F(3,6) = 9.72$, $p < .05$). Follow-up investigation involved eight contrasts as described earlier. Only one contrast, the cooperative-mastery learning group versus the control group (C3), reached statistical significance ($F(1,6) = 23.45$, $p < .00625$). One other contrast, the cooperative-mastery learning group versus the cooperative learning group (C5), approached statistical significance ($F(1,6) = 16.55$, $p = .0066$).

Table 4 contains the delayed posttest score means and standard deviations for each treatment group on the written understanding-of-economic-concepts measure. Again, the cooperative-mastery learning group attained the highest mean score, followed by the mastery learning, cooperative learning, and control groups respectively. Results of the analysis of written delayed posttest scores indicated no significant difference between schools ($F(1,2) = .47$, $p > .05$)., but there was a significant school-by-treatment interaction effect ($F(3,6) = 12.74$, $p < .01$) as well as a significant treatment effect ($F(3,6) = 22.36$, $p < .01$). Because of the significant school-by-treatment interaction, interpreting the results from the written delayed posttest is problematic; the main effect for treatment may be the result of the interaction. A possible explanation for the interaction effect is offered in the next paragraph.

With respect to the written delayed posttest, subjects from school #1 scored highest in the cooperative-mastery learning group, while subjects from school #2 scored highest in the mastery learning group. This school-treatment interaction can possibly be attributed to two factors. Student population differences between the two schools participating in the study constitute one possible factor. As mentioned previously, 50% of the students at school #2 were female, compared to only 43% at school #1; in addition, 37% of the students at school #2 were members of a minority group (mostly African-American), compared to only 11% at school #1. A second possible factor is teacher effect. As noted by the main

investigator and research assistant #1 during their monitoring of instruction, the two teachers (one at each school) using the cooperative-mastery learning method seemed to vary somewhat in their instructional delivery--with the teacher at school #1 tending to place greater emphasis on mastery learning elements and the teacher at school #2 tending to place greater emphasis on cooperative learning elements. The cooperative-mastery learning teachers' attention to elements of mastery learning, especially corrective feedback from the teacher, may have been vitally important to maximizing individual students' success on the written understanding-of-economic-concepts measure.

As with the written posttest, follow-up investigation for the written delayed posttest involved eight contrasts. The following four contrasts reached statistical significance: (C2) the mastery learning group versus the control group ($F(1,6) = 32.04$, $p < .00625$); (C3) the cooperative-mastery learning group versus the control group ($F(1,6) = 54.07$, $p < .00625$); (C5) the cooperative-mastery learning group versus the cooperative learning group ($F(1,6) = 27.99$, $p < .00625$); and (C7) the combined cooperative-mastery, mastery, and cooperative learning groups versus the control group ($F(1,6) = 37.89$, $p < .00625$). One other contrast, the cooperative-mastery learning group versus the combined mastery and cooperative learning groups (C8), approached statistical significance ($F(1,6) = 16.26$, $p = .0069$).

Table 5 shows the posttest score means and standard deviations for each treatment group on the oral understanding-of-economic-

concepts measure. The order of the treatment groups, from highest achieving to lowest achieving based on oral posttest score means, was as follows: cooperative-mastery learning, mastery learning, control, and cooperative learning. Results of the analysis of oral posttest scores indicated no significant difference between schools ($F(1,2) = .04$, $p > .05$) and no school-by-treatment interaction effect ($F(3,6) = 1.01$, $p > .05$). However, there was a significant treatment effect ($F(3,6) = 9.89$, $p < .01$). Of the eight contrasts investigated in the post hoc analysis, three contrasts reached statistical significance as follows: (C3) the cooperative-mastery learning group versus the control group ($F(1,6) = 21.88$, $p < .00625$); (C5) the cooperative-mastery learning group versus the cooperative learning group ($F(1,6) = 22.57$, $p < .00625$); and (C8) the cooperative-mastery learning group versus the combined mastery and cooperative learning groups ($F(1,6) = 21.49$, $p < .00625$).

Table 6 contains the delayed posttest score means and standard deviations for each treatment group on the oral understanding-of-economic-concepts measure. Results of the oral delayed posttest were similar to those of the oral posttest, with groups falling in the same order (from highest achieving to lowest achieving) as before. There was no significant difference between schools ($F(1,2) = 0.00$, $p > .05$) and no school-by-treatment interaction ($F(3,6) = 3.59$, $p > .05$). There was a significant treatment effect ($F(3,6) = 16.60$, $p < .01$). As with the oral posttest, post hoc analysis was used for further investigation. The following four contrasts reached statistical significance: (C3) the cooperative-

mastery learning group versus the control group ($F(1,6) = 34.05$, $p < .00625$); (C5) the cooperative-mastery learning group versus the cooperative learning group ($F(1,6) = 40.15$, $p < .00625$); (C6) the cooperative-mastery learning group versus the mastery learning group ($F(1,6) = 19.15$, $p < .00625$); and (C8) the cooperative-mastery learning group versus the combined mastery and cooperative learning groups ($F(1,6) = 38.26$, $p < .00625$).

In order to clarify the results of the study, Table 12 is provided. Table 7 summarizes across all of the posttest and delayed posttest significance tests. For each posttest and delayed posttest, it indicates which of the eight contrasts reached statistical significance or approached statistical significance.

Table 8 shows the percentage of students, within each treatment group, scoring at mastery level (80% correct) on each pretest, posttest, and delayed posttest. Posttest and delayed posttest percentages ranged from 38 to 57% for the cooperative-mastery learning group, 13 to 33% for the mastery learning group, 0 to 20% for the cooperative learning group, and 0 to 10 % for the control group. Thus, the cooperative-mastery learning group clearly exceeded all other treatment groups in promoting content mastery.

Retention of economic learnings from posttest to delayed posttest was stable across all measures and all treatment groups. Based on posttest and delayed posttest means, the various treatment groups, at first glance, appeared to have made achievement gains from posttest to delayed posttest simply through repeated exposure

to the written and oral understanding-of-economic-concept instruments. These apparent gains proved to be erroneous, however, for no changes in mean scores from posttest to delayed posttest were found to be statistically significant. In each treatment group, some students' scores increased, while other students' scores decreased, but the overall achievement level for each treatment group remained constant from posttest to delayed posttest.

Discussion

Bloom (1984) suggests that cooperative and mastery learning methods be combined to promote cognitive performances. The effectiveness of this combined approach has been evinced in recent studies by Mevarech (1985, 1991), Slavin and Karweit (1984), and Mevarech and Susak (1993). The results of the present study are in agreement with the findings of the aforementioned studies, lending further support to Bloom's suggestion. Overall, the cooperative-mastery learning method appears to produce a higher level of economic concept acquisition and retention than either method (cooperative or mastery learning) by itself. The cooperative-mastery learning group outperformed (a) the control group on all posttests and delayed posttests and (b) the cooperative learning group on all posttests and delayed posttests except the written posttest. By delayed posttest on the oral measure, the cooperative-mastery learning group was also outperforming the mastery learning group. As further evidence of the superiority of

the cooperative-mastery learning method, the mean score of the cooperative-mastery learning group was greater than the combined mean scores of the mastery and cooperative learning groups on the oral posttest and delayed posttest. It should be noted that two other contrasts approached but did not reach statistical significance--(1) the cooperative-mastery learning group versus the cooperative learning group on the written posttest and (2) the cooperative-mastery learning group versus the combined mastery and cooperative learning groups on the written delayed posttest.

Possible explanations for the results of this study can be found in the literature. As noted by Mevarech and Susak (1993), cooperative learning and mastery learning are derived from different approaches but seem to complement each other. Through its small-group setting, cooperative learning provides a natural situation for children to communicate (Sharan, 1980), but it fails to provide (a) systematic diagnosis of each student's performance and (b) corrective feedback to each student so that every student can master the learning (Mevarech, 1985). In addition, the use of cooperative learning groups may enhance motivation through fostering active participation (Mevarech and Susak, 1993), but increased motivation may not be sufficient with regard to economic concept acquisition and retention among young children. Likewise, the employment of practice and feedback correctives in mastery learning (Bloom, 1976) may promote concept development, but a review of the theoretical and research literature suggests that an individualistic setting may not be best suited for this purpose.

Vygotsky (1978) contends that concepts can be developed and modified as students communicate with each other. Through social learning situations in the form of group discussions, students can operate at a higher cognitive level than they can individually.

In a study related specifically to economic concept development, Berti et al. (1986) note that children make progress toward concept mastery by talking about economic concepts they have not yet mastered. Therefore, by participating in cooperative discussion groups (as in the present study), even young children may be able to improve their understanding of difficult economic concepts and their verbal fluency with these same ideas. By combining cooperative and mastery learning methods, teachers can take advantage of the strengths while overcoming the weaknesses of each individual method.

The cooperative-mastery learning method is in line with early childhood practices currently being promoted in the professional literature. For example, Katz and Chard (1990) suggest that the use of specific, positive feedback, an element of mastery learning, is essential to the development of learner interest. Such feedback, if it includes information about the competence of the work, is especially effective in promoting children's willingness to continue their efforts without external pressure. Interest and mind-engagement can be further strengthened by providing for sustained effort and involvement with a topic over a period of days. The cooperative-mastery learning treatment condition in the present study not only provided specific, positive feedback in the

form of feedback correctives from the teacher, but also provided a social context for extending, elaborating, and continuing work and play related to each of the economic topics/concepts covered.

Another example of the cooperative-mastery learning method's agreement with current early childhood practices can be found in Clay (1991). In discussing oral language support for early literacy, Clay asserts that a child learns language by functioning as both a speaker and listener during instruction and play. In struggling to understand and to be understood, the child learns more about language (and, in turn, about the ideas/concepts being communicated). The cooperative-mastery learning treatment in the present study, through the use of cooperative discussion groups, provided children with opportunities to talk about economic concepts; together, children struggled toward shared meaning and greater verbal fluency with selected economic ideas. Not surprisingly, the superiority of the cooperative-mastery learning method in promoting the acquisition and retention of economic concepts was especially evident in the results from the oral understanding-of-economic-concepts delayed posttest.

Given the above explanation of the study's results, one may wonder why the cooperative learning group performed so poorly in comparison to the cooperative-mastery learning group. Clay (1991) may have the answer to this question, for she contends that interesting play and work activities, in and of themselves, may not be sufficient for promoting young children's language learning. One-to-one conversational exchanges between a child and a competent

adult speaker may be necessary to bring about the desired language behavior. By talking with children in simple, varied, and grammatical language, an adult can help shape the word and grammar skills of a child. Vygotsky (1978) notes that language development tends to lag behind conceptual development. In the present study, through the requirement of feedback correctives from the teacher, the mastery learning and cooperative-mastery learning treatments afforded opportunities for adult-child conversational exchanges about economic concepts. It is likely that such exchanges contributed to (a) the refinement of students' conceptual understanding of economic ideas and (b) the development of students' verbal fluency in expressing those ideas. Of the two treatment conditions featuring elements of mastery learning, only the cooperative-mastery learning treatment condition gave children a chance to talk with a knowledgeable adult teacher and with each other. Perhaps this is the reason for the superior performance of the cooperative-mastery learning group, especially with respect to the oral understanding-of-economic-concepts measure at delayed posttest.

The present study focussed on vicarious experiences (in the form of economic fables, story follow-up activities, games, and seatwork activities) that varied in their use and non-use of cooperative and mastery learning elements. Based on the overall results of this study, the combined use of cooperative and mastery learning methods within vicarious instructional experiences appears to be better than either method alone as a means for fostering

economic concept acquisition and retention. Perhaps the superiority of cooperative-mastery learning in this study is attributable to the method's capacity for simultaneously boosting the conceptual development and language development of young children. This capacity may stem from the method's provision of (a) specific, positive feedback, (b) a social context for sustained effort and involvement in a topic, (c) child-child communication exchanges, and (d) adult-child communication exchanges.

The vicarious stories, story follow-up activities, games, and seatwork activities utilized by the various treatment groups in the present study should not be viewed by early childhood educators as appropriate substitutes for real-life experiences with economic concepts. Studies by Laney (1989, 1993) have demonstrated the power inherent in real-life experiences for enhancing young children's understanding and retention of economic concepts. Based on the results of these studies, real-life experiences seem to be ideally suited for use as initial learning activities, while vicarious experiences used in conjunction with cooperative and/or mastery learning methods seem more appropriate as reinforcement or follow-up activities. The findings of the present study add credence to this assertion. The fact that the most effective treatment condition resulted in only 57% of the students achieving content mastery possibly can be attributed to (a) the non-use of real-life experiences during instruction, (b) the use of only one remediation-retesting cycle in the mastery and cooperative-mastery learning groups because of time constraints, and/or (c) the

difficulty of certain economic concepts (e.g., good, service, complement, and substitute) for young learners.

In order to avoid over-stating the results of this study, two final points need to be made. First, the authors acknowledge that the "superiority" of the cooperative-mastery learning method does not necessarily extend to all educational goals. The cooperative-mastery learning method may be more effective than cooperative or mastery learning alone in helping children learn the economic ideas taught in this study, but it may not be most effective in conjunction with other content and outcomes. For example, in Mevarech and Susak (1993), cooperative-mastery learning resulted in the highest scores when the goal was originality, while mastery learning resulted in the highest scores when the goal was flexibility and fluency. Second, cell sizes in the present study were too small to permit a meaningful gender (or grade level) x treatment x school analysis. Future studies would benefit from larger cell sizes allowing the exploration of possible school, gender, and grade-level effects.

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TABLE 1
PRETEST SCORE MEANS AND STANDARD DEVIATIONS ON THE WRITTEN UNDERSTANDING-OF-ECONOMIC-CONCEPTS MEASURE

		Treatment Group							
		Control		Cooperative Learning		Mastery Learning		Cooperative-Mastery Learning	
		Mean	STD	Mean	STD	Mean	STD	Mean	STD
School	Grade level								
1	1	13.03	2.37	12.95	1.80	11.60	2.92	13.13	1.72
	2	15.75	2.44	14.66	2.16	13.56	1.57	15.22	2.26
2	1	11.58	1.33	13.04	1.36	13.21	1.58	12.13	1.83
	2	15.29	1.90	15.00	3.46	16.54	2.19	16.00	1.95
ALL		13.92	2.61	13.83	2.32	13.43	2.77	14.06	2.37

TABLE 2
PRETEST SCORE MEANS AND STANDARD DEVIATIONS ON THE ORAL UNDERSTANDING-OF-ECONOMIC-CONCEPTS MEASURE

		Treatment Group							
		Control		Cooperative Learning		Mastery Learning		Cooperative-Mastery Learning	
		Mean	STD	Mean	STD	Mean	STD	Mean	STD
School	Grade level								
1	1	4.50	2.65	5.25	4.35	4.50	1.91	5.00	1.41
	2	5.00	2.71	4.50	3.11	5.00	1.83	5.00	1.63
2	1	3.50	0.58	3.50	1.73	3.25	0.96	3.50	1.00
	2	5.25	2.75	4.50	2.38	6.00	2.45	5.00	0.82
ALL		4.56	2.22	4.44	2.80	4.69	1.96	4.63	1.31

TABLE 3
POSTTEST SCORE MEANS AND STANDARD DEVIATIONS ON THE WRITTEN UNDERSTANDING-OF-ECONOMIC-CONCEPTS MEASURE

		Treatment Group							
		Control		Cooperative Learning		Mastery Learning		Cooperative-Mastery Learning	
		Mean	STD	Mean	STD	Mean	STD	Mean	STD
School	Grade level								
1	1	16.50	4.97	19.40	6.36	20.55	5.79	23.20	6.10
	2	19.63	5.66	19.81	5.07	19.75	5.57	26.75	2.55
2	1	13.83	3.43	11.92	2.62	17.17	6.94	16.83	5.04
	2	19.50	3.27	21.50	2.81	24.50	3.56	22.50	5.83
ALL		17.40	4.94	18.43	5.74	20.45	5.84	22.73	5.92

TABLE 4
DELAYED POSTTEST SCORE MEANS AND STANDARD DEVIATIONS ON THE WRITTEN UNDERSTANDING-OF-ECONOMIC-CONCEPTS MEASURE

		Treatment Group							
		Control		Cooperative Learning		Mastery Learning		Cooperative-Mastery Learning	
		Mean	STD	Mean	STD	Mean	STD	Mean	STD
School	Grade level								
1	1	16.35	4.64	18.40	7.43	19.60	4.48	23.70	4.14
	2	19.75	4.50	20.00	5.76	19.88	5.59	25.88	2.17
2	1	12.92	2.29	14.00	3.78	18.33	5.65	16.58	5.73
	2	19.08	5.43	21.00	4.82	24.83	4.02	20.83	5.95
ALL		17.12	4.91	18.47	6.14	20.47	5.22	22.28	5.44

TABLE 5
POSTTEST SCORE MEANS AND STANDARD DEVIATIONS ON THE ORAL UNDERSTANDING-OF-ECONOMIC-CONCEPTS MEASURE

		Treatment Group							
		Control		Cooperative Learning		Mastery Learning		Cooperative-Mastery Learning	
		Mean	STD	Mean	STD	Mean	STD	Mean	STD
School	Grade level								
1	1	7.00	3.74	8.75	2.87	8.75	2.50	12.25	2.63
	2	9.00	1.83	7.50	1.00	9.75	4.11	14.25	2.06
2	1	7.50	3.42	6.00	1.63	7.75	3.77	11.00	4.08
	2	9.50	2.38	10.50	2.38	11.50	3.87	11.38	4.15
ALL		8.25	2.84	8.19	2.54	9.44	3.54	12.22	3.27

TABLE 6
DELAYED POSTTEST SCORE MEANS AND STANDARD DEVIATIONS ON THE ORAL UNDERSTANDING-OF-ECONOMIC-CONCEPTS MEASURE

		Treatment Group							
		Control		Cooperative Learning		Mastery Learning		Cooperative-Mastery Learning	
		Mean	STD	Mean	STD	Mean	STD	Mean	STD
School	Grade level								
1	1	8.25	2.99	9.75	1.71	9.75	2.50	14.75	1.50
	2	8.25	0.50	7.25	2.06	9.75	2.63	14.00	4.24
2	1	8.25	2.75	7.13	1.75	7.75	2.75	11.00	2.16
	2	11.50	0.58	10.75	1.89	13.00	3.16	12.50	3.00
ALL		9.06	2.35	8.72	2.32	10.06	3.15	13.06	3.00

TABLE 7
RESULTS OF POSTTEST AND DELAYED POSTTEST
SIGNIFICANCE TESTS

Contrast	Test			
	Written UEC Posttest	Written UEC Delayed Posttest	Oral UEC Posttest	Oral UEC Delayed Posttest
1. Cooperative Learning vs. Control				
2. Mastery Learning vs. Control		*		
3. Cooperative-Mastery Learning vs. Control	*	*	*	*
4. Mastery Learning vs. Cooperative Learning				
5. Cooperative-Mastery Learning vs. Cooperative Learning	+	*	*	*
6. Cooperative-Mastery Learning vs. Mastery Learning				*
7. Cooperative, Mastery, and Cooperative-Mastery Learning vs. Control		*		
8. Cooperative-Mastery Learning vs. Mastery Learning and Cooperative Learning		+	*	*

* = reached statistical significance
+ = approached statistical significances
UEC = Understanding -of-Economic-Concepts

TABLE 8
PERCENTAGE OF STUDENTS SCORING AT MASTERY LEVEL (80% CORRECT)
BY TEST AND TREATMENT GROUP

Test	Treatment Group			
	Control	Cooperative Learning	Mastery Learning	Cooperative-Mastery Learning
Written UEC Pretest	0%	0%	0%	0%
Written UEC Posttest	10%	20%	33%	57%
Written UEC Delayed Posttest	10%	20%	27%	50%
Oral UEC Pretest	0%	0%	0%	0%
Oral UEC Posttest	0%	0%	13%	38%
Oral UEC Delayed Posttest	0%	0%	13%	50%

'UEC = Understanding-of-Economic-Concepts

APPENDIX A
SUBUNIT FORMAT FOR EACH TREATMENT GROUP

Lesson	TREATMENT GROUP			
	Control	Cooperative Learning	Mastery Learning	Cooperative-Mastery Learning
1	•Teacher reads economic fable. •Teacher repeats definition(s) and example(s) of concept(s) from fable. •Individual students dictate sentences and draw pictures summarizing what they learned from the fable. •Teacher gives no feedback correctives.	•Teacher reads economic fable. •Teacher repeats definition(s) and example(s) of concept(s) from fable. •Cooperative student teams complete follow-up activity that goes with fable. •Teacher gives no feedback correctives.	•Teacher reads economic fable. •Teacher repeats definition(s) and example(s) of concept(s) from fable. •Individual students complete follow-up activity that goes with fable. •Teacher gives feedback correctives.	•Teacher reads economic fable. •Teacher repeats definition(s) and example(s) of concept(s) from fable. •Cooperative student teams complete follow-up activity that goes with fable. •Teacher gives feedback correctives.
2	•Teacher shows and explains more concept examples using pictures.* •Individual students generate their own concept examples by drawing pictures and dictating picture captions. •Teacher gives no feedback correctives.	•Teacher demonstrates how to play card game that reinforces concept(s) introduced in lesson 1.* •Cooperative student teams play the card game. •Teacher gives no feedback correctives.	•Teacher demonstrates how to play card game that reinforces concept(s) introduced in lesson 1.* •Individuals play the card game. •Teacher gives feedback correctives.	•Teacher demonstrates how to play card game that reinforces concept(s) introduced in lesson 1.* •Cooperative student teams play the card game. •Teacher gives feedback correctives.
3	•Teacher shows and explains more concept examples using pictures. + •Individual students generate their own concept examples by drawing pictures and dictating picture captions. •Teacher gives no feedback correctives.	•Cooperative student teams complete a practice worksheet on the concept(s) studied in lessons 1 and 2. +◆ •Teacher does not score practice worksheet. •Teacher gives no feedback correctives.	•Individual students complete a mastery test (form A) on the concept(s) studied in lessons 1 and 2. + •Teacher scores mastery test (form A), marking correct and incorrect answers. •Individual students scoring below mastery level receive feedback correctives from teacher. ◆ •Individual students scoring below mastery level re-take mastery test (form B). •Teacher scores mastery test (form B) and gives feedback correctives.	•Individual students complete a mastery test (form A) on the concept(s) studied in lessons 1 and 2. + •Teacher scores mastery test (form A), marking correct and incorrect answers. •Individual students scoring below mastery level receive feedback correctives from their respective cooperative student teams. ◆ •Individual students scoring below mastery level re-take mastery test (form B). •Teacher scores mastery test (form B) and gives feedback correctives.

*The pictorial concept examples and game cards were identical in nature.
+The pictorial concept examples, practice worksheet items, and mastery test items were identical in nature.
◆Early finishers (students not receiving/or not needing remediation) were directed to play the card game from lesson 2 until the end of the period.

APPENDIX B
ORAL INTERVIEW QUESTIONS AND DIRECTIONS TO INTERVIEWER

Pretest/Posttest Questions	Directions to Interviewer
1. Do people have everything they want?	1.
2. Why do/don't people have everything they want?	2.
3. Which dollar would you prefer/like to have? Why would you prefer/like to have that dollar?	3. Present the student with two one-dollar bills--one genuine and one play.
4. Why does this dollar have value/worth?	4. Point to the genuine dollar bill.
5. Why does this dollar have no real value/worth?	5. Point to the play dollar bill.
6. Why do customers give money to store owners?	6. Show a picture of a person purchasing something in a store. Point to the customer (standing behind a shopping cart). Point to the store owner (standing behind a cash register).
7. What is change?	7.
8. Why do store owners give change/money back to customers?	8. Show the same picture as in question #6. Point to the store owner. Point to the customer. After the student answers the question, remove the picture.
9. You are at a store and have 5¢ in your pocket. Pick out three things you would like to have from the store. Remember you have 5¢ in your pocket. The ( ) costs 5¢; the ( ) costs 5¢; and the ( ) costs 5¢. What is your problem?	9. Give the student an "allowance" of 5¢. Show the student a box labeled "store" and containing five items, each priced at 5¢. After the student indicates his/her three wants, remove all other items from the student's view. Point to each item/want as you talk about it.
10. What are your alternatives/possible choices of what to do with your money?	10. After the student answers this question, have him/her (a) list reasons why s/he would like to have each item, (b) select one item to buy, (c) pay for the item, and (d) tell why s/he selected that item over the others.
11. When you selected the ( ) over the ( ), was there anything that you were giving up? Can you explain how?	11. Point to each item/want as you talk about it. Remove all items after the student answers the question.
12. What is the connection between wheat and bread? How do wheat and bread go together?	12. Show pictures of wheat and bread. Point to the appropriate pictures as the question is read.
13. Imagine that a factory owner has some apples. S/he can use the apples to make apple pie for people to eat. Or s/he can use the apples to make applesauce for people to eat. Does the factory owner give up anything if s/he uses the apples to make applesauce?	13. Show a plastic apple.
14. How are the jobs of a shoe maker, pizza cook, and florist alike?	14. Show pictures of a shoe maker, pizza cook, and florist. Point to the appropriate pictures as the question is read.
15. How are the jobs of bus driver, movie star, and hair stylist alike?	15. Show pictures of a bus driver, movie star, and hair stylist. Point to the appropriate pictures as the question is read.
16. I am going to tell you about a person named John. John has a store. He sells pencils at his store. What else could John sell at his store that would go well with pencils?	16. Show a pencil.
17. Pencils have been selling well at John's store, but John can no longer get any pencils to sell. The nearby pencil factory has closed. What could John sell at his store that could be used in place of pencils?	17.